Claims

1. A unit for pumping fuel to an internal combustion engine, having a rotor supported eccentrically in a pump chamber, with guide grooves disposed on the circumference, in which grooves sealing bodies are provided that are guided in the radial direction along a shaped sliding surface, the shaped sliding surface having elliptical portions, characterized in that the course, expressed in polar coordinates (φ), of the radii (ρ) of the elliptical portions corresponds at least in portions to one of the two following equations, in which ($R_2$) is the radius of the rotor (15), n is a variable power, and ($s_1$) is the eccentricity:

$$\rho(\varphi) = \frac{R_2 * \sqrt{R_2 + 2s_1}}{\sqrt[n]{R_2^{n/2} * \left(\left|\cos\left(\varphi + \frac{\pi}{2}\right)\right|\right)^n + (R_2 + 2s_1)^{n/2} * \left(\left|\sin\left(\varphi + \frac{\pi}{2}\right)\right|\right)^n}}$$

$$\rho(\varphi) = \frac{\sqrt{R_2} * (R_2 + 2s_1)}{\sqrt[n]{R_2^{n/2} * (|\cos(\varphi)|)^n + (R_2 + 2s_1)^{n/2} * (|\sin(\varphi)|)^n}}$$

2. The unit according to claim 1, characterized in that the parameter n is in the range between greater than or equal to 1.9 and less than or equal to 2.1.

3. The unit according to claim 1, characterized in that the eccentricity ($s_1$) is less than or equal to a radius (R) of the sealing body (39).

4. The unit according to claim 1, characterized in that the radii (ρ) of the various elliptical portions are the same at the transitions.

5. The unit according to claim 1, characterized in that the slopes of the various elliptical portions are the same at the transitions.

6. The unit according to claim 1, characterized in that the curvatures of the various elliptical portions are the same at the transitions.

7. The unit according to claim 1, characterized in that the shaped sliding surface has from two to four elliptical portions.